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ABSTRACT

A simulation game of strategy relating to alternate confession choices of two prisoners is described. The game, Prisoner's Dilemma, is designed to help participants learn about trust, cooperation, competition, intergroup dynamics, and their own life role and feelings. Three choices are offered at the beginning of the game to two prisoners, held incommunicado, each charged with the same crime: (1) both prisoners confess and can be convicted, (2) neither prisoner confesses and neither can be convicted, and (3) one prisoner confesses and one does not, allowing the first to go free and the other to receive a more severe punishment. Each choice relates to the central dilemma of whether a rational prisoner should confess, and it is plotted along a two-by-two matrix indicating the outcome. A postgame analysis is recommended. Seven discussion questions concerning individual players' reactions during the game and their feelings about other players are suggested. Problems of assessing what people actually learn in games of this type are recognized. Game instructions, references, and a matrix and tally sheet are included in the paper. (Author/DB)

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PRISONER'S DILEMMA AS A SOCIAL SIMULATION GAME

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Prisoner's Dilemma as a Social Simulation Game

The tale of the Prisoner's Dilemma and the 2 x 2 payoff matrix derived from it is perhaps the best known of all non-zero sum simulation games. P. D. has been the subject of much research into game and decision making theory, (Rapoport, 1973). The tale is one of two prisoners charged with the same crime who are held incommunicado. If both confess both can be convicted, if neither confess neither can be convicted. If one confesses and one does not, the first goes free and gets a reward and the other gets a more severe punishment than if both confessed. The dilemma is whether a rational prisoner should confess. The exercise adapted from this is a game of strategy for two players or two teams, each of which has two choices along a two by two matrix indicating the outcome (payoff). Typically the game is played for a series of rounds and the payoffs may be altered to heighten the interaction among the participants. Descriptions of how to play the game can be found in Johnson (1972) and Pfeiffer and Jones (1971).

The value of Prisoner's Dilemma for classroom use, training, or other educational purposes is for participants to examine their experience during the game and thereby learn about trust, cooperation, competition, intergroup dynamics and their own role and feelings in the course of the game. The value in this, as in other experiential exercises, is that learnings result from actual experiences rather than cognitive input alone. As in most games, the post game analysis and discussion is where much of the learning takes place. For Prisoner's Dilemma, Johnson (1972, p. 51) suggests the following discussion questions:

1) How many points did you and the other player/team make?
2) What were your feelings and reactions about yourself and others during the game?

3) How do you describe the other player/team's behavior during the game and how would they describe your behavior?

4) Did the two teams trust each other? Were both trustworthy?

5) How was trust built into the game?

6) How did it feel to have your trust violated (if this happened)?

7) What effect did the negotiation periods have on the game?

Players will often experience personally the validity of research findings such as that trust is often very hard to build and easy to destroy, that inappropriate trust may be as dysfunctional as no trust, and that how the situation is defined affects how easily trust may be built. If the game is described as a problem solving or cooperative exercise, trust is relatively easy to build; if it is defined as a competitive situation trust is much harder to build. The analogies to real life situations need hardly be pointed out.

Learnings from Prisoner's Dilemma and other simulation games can include sensitivity to and awareness of situations where conflicting interests are common. Indeed, conflict resolution is a central issue in marriage-family relations, organizational, political, and interpersonal relations generally. The negotiation and bargaining that occur in the game can highlight this as well as serve to examine how and why the decisions and strategies employed were arrived at. The game can also highlight the differences between individual rationality and collective rationality since what is individually rational may not be collectively or vice versa (Rapoport, 1973, p. 8)

The problems with using games and exercises of this type are that it is often difficult to really know what people learned. The learning experience can be focused toward external social issues and intergroup behavior or toward internal learning in which the participant gets more in touch with who he is,

how he feels, and how he behaves in given situations; yet in most games both such learnings are possible, and I suspect that the way in which the game is introduced and the directions of the post game discussion influence which type of learning prevails.

Results of games are difficult to evaluate because the learnings are not always predictable or easily measurable. In an attempt to assess the effectiveness of educational games Cherryholmes (1966) found support for the hypothesis that students participating in a simulation will reveal more interest in simulation exercises than in more conventional classroom activities. More generally, the research on the effectiveness of simulation games in the classroom shows that there is no justification for concluding that simulations are either more or less effective than traditional teaching techniques (Cherryholmes, 1966, p.5)

Since simulation gaming overcomes the most common criticism of education that students are passive and not active participants, the enthusiasm and activity evident in most simulations may itself be taken as evidence of a heightened interest in learning. Most essential, I think, is that the trainer, therapist, or teacher know what purpose is intended in using any simulation game. It may be to get people acquainted, to let them see each other in different roles than they are accustomed to, to help them get in touch with their own feelings, or to teach something about how society works through simulated experience of it.

Let me now turn to a broader issue, the question of values that applies to all simulation games. What is often overlooked is that games have implicit (and often not so implicit) values built into them. Games that have competitive structures tend to bring out competitive values and perhaps reinforce them. Games are set up to reinforce or examine certain values which then

underlie the outcome and subsequent learning.

A critique of simulation games comes from Hampden-Turner (1974, p. 97-98) who argues that the model of most games precludes synergistic solution; i.e. in Prisoner's Dilemma there are only two choices for each side, the payoff table is fixed, etc. Games are biased toward rules, rationality, and formal strategy. Students often resist this and seek innovative solutions that the game may not be able to accommodate. This itself can be recognized as useful learning, perhaps learning that would not have taken place had the game not serendipitously raised the issue and thus allowed the players to become aware of the relation between their values and those implicit in the game. Hampden-Turner talks about a game where researchers classified players into "cooperators" and "exploiters", which indicates a false dichotomy, Appeasers v. Aggressors. "During the rest period in the games, students tried informally to negotiate a pact to break out of the game and achieve synergy. It says more about the methods of social science that solutions are created the moment the Cage of Rationality is momentarily suspended, and dialectical logic rather than formal strategy is employed." (1974, p. 98)

I have had similar experiences with SIMSOC and other simulation games where students revolted and resisted adopting the values implicit in the game. The point of all of this is to emphasize that other outcomes than those hoped for may arise and that the values built in or tapped by the game may themselves come under examination.

My familiarity with simulation games is not only in an educational setting. I have used a cooperation exercise in a counseling group and found it most useful as a therapeutic tool and I suspect many other exercises designed for classrooms could be useful in therapy or training groups. It would do well

for users of simulation games to be aware of the potential value of unintended consequences and unpredicted outcomes for additional learning or insight. Indeed, several game theorists have suggested that when students become simulators and design their own games, thus being able to manipulate rules and resources, the learning experience is even more powerful than when merely playing already established games. (Raser, 1966; Gamson, 1971)

The learning possibilities from simulation gaming seem infinite which is what makes them so exciting to me. They may lead to personal growth, a sensitivity to the effect of physical settings on behavior, influence attitudes, a better understanding of real life complexities or possibilities, be motivators to further inquiry and learning, or a way of understanding social systems in a more meaningful and integrated manner. The possibilities are endless.

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JG/km
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PRISONER'S DILEMMA GAME

CONCEPT AREA: Trust

OBJECTIVE:

To provide an intergroup situation (a game of strategy) where students can experience the effects of competitive and collaborative behaviors on trust between group members and between groups.

MATERIALS NEEDED:

1. Sheet with payoff matrix and schedule of rounds for each player.
2. Ten small slips of paper for each team.

REFERENCES:

1. Glass, John. "Prisoner's Dilemma as a Social Simulation Game." Paper presented at 1976 Pacific Sociological Association Meeting, San Diego.
2. "Prisoner's Dilemma Game" in Johnson, David, Reaching Out, Prentice Hall, 1972, pp. 49-52.
3. Pfeiffer W. and Jones, J. Structured Experiences for Human Relations Training, Vol. III. San Diego: University Associates Press, 1971, pp. 60-62.
4. Rapoport, Anatol. Experimental Games and Their Uses in Psychology. Morristown, N.J.: General Learning Corp., 1973.

PROCEDURE:

Two teams, Red and Blue, of not more than eight persons each, are formed and seated separately, preferably in two adjacent rooms since no communication between the groups is allowed except during scheduled negotiation sessions.

The players are not told the prisoner's dilemma or the objectives of the game, only that they may choose between increasing their own gain or increasing the total gain of both groups.

The matrix - tally sheets are given to each player and teams are told that there will be ten rounds with the Red team choosing C or D each round and the Blue team choosing A or B.

The payoff schedule is explained by showing how the combination of choices from both teams determines the payoff for each round. For example, Blue's choice of B and Red's choice of C would indicate the

upper right hand quadrant with a gain of 25 points for Blue and a loss of 25 points for Red. I start each team out with 50 points so that losses in the first round or two do not immediately create a negative score.

Each round, except five and nine, lasts three minutes and the groups are instructed not to write down their decision until the end of the time period to avoid hasty decisions. At the end of each round the instructor collects from each team a slip of paper with their choice on it and announces the outcome.

After rounds four and eight a period of 5 minutes is allowed to the teams to negotiate with each other. Each team chooses one negotiator and one observer-runner who can relay messages back and forth to his/her team.

Rounds five and nine, the rounds immediately following the negotiations, are allowed five minutes each and the payoffs are increased for these rounds only as indicated on the sheet.

After ten rounds both groups meet together to discuss the experience. At this time the origins of the exercise and the tale of the prisoner's dilemma can be told and a discussion can include expressions of feelings about what occurred, how each group made their decisions, whether trust was built up and maintained, and the conditions under which competitive or collaborative behavior is likely to occur.

The concept of self fulfilling prophecy may be illustrated by what took place and issues around trust - conditions for, risks involved, and consequences of - can be explored with their implications for behavior in a variety of social settings from interpersonal to international relations.

An optional focus can be on leadership and decision making in small groups.

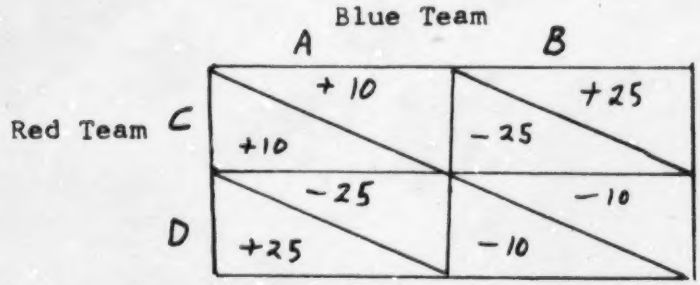
PITFALLS:

The instructor must be careful not to define the game as either a collaborative or competitive situation, e.g. "the objective is to make the most points for your team". Students will invariably ask what is the objective or goal and the instructor should avoid answering this since the teams themselves should choose their objectives.

By John F. Glass

JFG/km
3.11.76

PRISONERS' DILEMMA MATRIX & TALLY



Round	Minutes	Choice Red	Choice Blue	Cumulative Points Red	Cumulative Points Blue
				50	50
1	3				
2	3				
3	3				
4	3 followed by 5 min. negotiation				
5 *	5				
6	3				
7	3				
8	3 followed by 5 min. negotiation				
9 **	5				
10	3				

* Payoff values doubled for this round
** Payoff values quadrupled for this round.

J. Glass-3/76